

Review Article

# Spiritual Intelligence and Spiritual Care in Nursing Practice: A Bibliometric Review

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## ABSTRACT

Spiritual intelligence (SI) has recently gained traction in various fields, including nursing. Given the increasing emphasis on patient-centred care and the holistic well-being of patients and nurses, SI is particularly relevant in nursing practice. A bibliometric analysis of recent publications (2014–2024) in the field helps synthesise and evaluate the existing research on SI in the general field of nursing, identify literature gaps, suggest future research directions and raise awareness of the importance of SI in nursing practice. The present study reports bibliometric data (n = 461) from the Scopus database on SI, spiritual quotient and spiritual care in nursing and health care. The data are analysed using MS Excel and VOSviewer software. The publications' trend analysis revealed a significant increase in SI-related publications since 2015. The study presents top-cited articles. Journal of Religion and Health was found to be a prominent journal with the maximum number of publications, and Sage was found to be the top publisher of journals with articles on SI. Network visualisation reveals central figures such as Wilfred McSherry, Trove Giske, Elizabeth Johnston Taylor, Fiona Timmins, Silvia Caldeira and Linda Ross as key researchers in the field. The United States and Iran have the most substantial connections of authors publishing on SI. This study reveals an increasing interest in SI and care within nursing research, confirming its growing significance in the field. By reporting areas where research on SI in nursing remains underdeveloped, the study paves the way for the development of new or updated curricula in nursing programs. The study can guide faculty development initiatives by highlighting the importance of SI and providing resources for educators to incorporate these concepts into their teaching. This study presents specific research questions to address these knowledge gaps. Future studies which can address these questions will enrich nursing education and practice, leading to improved patient outcomes and enhanced nurse well-being using the full potential of SI in nursing practice.

**Keywords:** Spiritual intelligence, Spiritual care, Spiritual quotient, Bibliometric analysis, Bibliometric indicators, Nursing, Healthcare

## INTRODUCTION

Spiritual intelligence (SI) addresses significant aspects of human experiences, specifically overall well-being and flourishing.<sup>[1]</sup> SI is defined as the ability to utilise spiritual information and insights to enhance one's life, navigate challenges and make meaningful and ethical decisions.<sup>[2]</sup> SI helps identify deeper meanings to life situations, recognise connections between diverse elements of life and apply this understanding in practical ways. Spiritual quotient (SQ) is a measure of SI, they are interconnected concepts, with SQ often used as a quantitative assessment of SI. SI is utilised for the personal growth of students,<sup>[3]</sup> organisational employees,<sup>[4]</sup> educators<sup>[5]</sup> and healthcare professionals,<sup>[6]</sup> as well as aiding in the recovery and adjustment of vulnerable groups. In the nursing or healthcare field, SI is essential for holistic and patient-centred care delivery.<sup>[7]</sup> By fostering a deeper understanding of patients' spiritual needs and values,

nurses can provide broader, more nuanced care towards human health, including emotional and spiritual dimensions. Nursing is known for its high-stress environments, ethical dilemmas and situations that can cause moral distress. End-of-life care, patient expectations, and satisfaction frequently result in burnout.<sup>[8]</sup> SI helps nurses develop better coping mechanisms, resilience and emotional stability. This enables them to find meaning in challenging situations by focusing on the inherent value of their work, build resilience by developing a sense of inner strength and deliver care aligned with their patients' diverse values and beliefs.<sup>[9,10]</sup> As the healthcare industry increasingly recognises the value of holistic and patient-centred care, the role of SI in nursing becomes even more pertinent.

SI is considered an essential component of overall intelligence that complements emotional intelligence and intellectual intelligence by addressing life's existential and spiritual

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dimensions.<sup>[11]</sup> King<sup>[12]</sup> explains SI with four dimensions: critical existential thinking, personal meaning production, transcendental awareness and conscious state expansion. Critical existential thinking in nursing involves guiding patients through existential questions impartially. Personal meaning production entails finding purpose from life experiences. Transcendental awareness enhances empathy and compassion, addressing patients' spiritual needs. Conscious state expansion, achieved through practices such as meditation, aids nurses in self-care and stress management. Developing these dimensions allows nurses to improve their capacity for compassionate and holistic care while supporting their own well-being. Battey<sup>[13]</sup> theorised spiritual care in nursing to enhance coping during challenges not just for patients but also for nurses and other healthcare professionals. Synthesising research on SI and spiritual care in healthcare and nursing practice is essential, and bibliometric analysis provides an appropriate starting point.

Three previous bibliometric studies in the nursing and healthcare fields have focused on spirituality, highlighting the growing interest in this area within these disciplines. Cavalcanti de Andrade *et al.*<sup>[14]</sup> reviewed 50 publications on palliative care and spirituality, published between January 2005 and December 2014, using databases such as SciELO, LILACS, PubMed and IBECs. This study analysed bibliometric indicators related to palliative care and spirituality in healthcare. Cullen<sup>[15]</sup> conducted a bibliometric review that used studies published from 1995 to 2014 and analysed 47 articles on nursing management, spirituality and religion, using 'Spiritual\*' and 'Religio\*' as search keywords. This study highlighted the integral role of spirituality and religion in nursing, setting a foundation for future research and application in the field. Coelho de Moura Angelim *et al.*<sup>[16]</sup> analysed the scientific literature on spirituality and HIV care from 2006 to 2015, utilising the PubMed database with 65 articles identified using the keywords 'HIV' and 'Spirituality'. These studies have primarily focused on spirituality. While spirituality and SI are often discussed together, it is important to note that they represent distinct concepts. Spirituality refers to an individual's personal beliefs, values and connection to a higher power or transcendent force. In contrast, SI is the ability to apply spiritual knowledge and wisdom to navigate life's challenges and opportunities. Furthermore, an incremental bibliometric analysis is warranted to incorporate more recent research published after 2015.

A study conducted by Rosady<sup>[17]</sup> specifically analysed SI. This systematic review used 702 articles on SI from 1964 to 2023 and was presented at the International Conference on Economic Business Management and Accounting. The author suggests that future research explore interventions aimed at teaching and enhancing SI in nurses and nursing students, acknowledging its potential benefits in this population. While this systematic review prioritises the quality and

synthesis of research findings, the bibliometric study provides a quantitative overview of the research landscape. This gap underscores the need for a focused reporting of publications in the field of nursing care and education pertaining to SI.

The present study aims to discern the shifting conceptualisations and applications of SI and spiritual care in nursing and healthcare practice, thereby educating on both the advancements and the gaps in nursing theory and practice. This review employs bibliometric tools to unveil the underlying structure of the field, uncovering the interconnect.<sup>[1]</sup> SI is the ability to utilise spiritual information and insights to enhance one's life and navigate challenges. The study uses a sizable recent sample and advanced bibliometric tools such as VOSviewer. The Scopus database is chosen for its comprehensive coverage and high indexation standards, ensuring a broad spectrum of reputable nursing and healthcare journals.<sup>[18]</sup> The knowledge from this bibliometric study guides practitioners, researchers, educators and policymakers in enriching nursing education and practice, potentially enhancing patient care quality and fostering collaborative research opportunities.

## MATERIALS AND METHODS

This study aimed to identify trends, key contributors and emerging areas of research on SI within nursing practice. Bibliometric analysis was employed on published articles in the Scopus database due to its comprehensive coverage of scholarly literature. Bibliometric research was particularly useful in this study for identifying research trends and key contributors since such analysis provides insights into how scholars communicate on a particular topic.<sup>[19]</sup> This method leverages data to provide researchers with crucial insights, leading to unique opportunities to contribute to theory and practice by identifying research gaps.<sup>[20]</sup>

### Search strategy

The articles were identified using SI-related search terms in the Scopus database. The comprehensive capabilities of this database support intricate bibliometric analyses. The search was conducted on the title, abstract and keyword fields (TITLE-ABS-KEY) – ('spiritual intelligence', 'spiritual quotient' AND 'spiritual care') combined with ('nurs\*' OR 'healthcare'). The search period was from 2014 to January 2024. The search was restricted to include only documents classified as articles, excluding letters, conference abstracts, editorials, news, presentations, book reviews and other types of publications. The final search identified 995 potential articles to explore. The data were retrieved from the Scopus database and saved as a CSV file through the export function.

### Data preparation

Out of the 995 publications, 50 non-English articles, 32 review synthesis papers, and 309 articles lacking terms related to SI, SQ, or spiritual care in their titles were excluded from the study. Further screening of the abstracts for studies

on nurses led to 141 exclusions, and two were excluded for indicating conceptual analysis. Finally, after this rigorous process, 461 studies were selected for bibliometric analysis.

**Analysis method**

The analysis follows the guidelines provided by Donthu *et al.*<sup>[19]</sup> The study presents the performance analysis of the impact of individual researchers, journals or publishers using the Microsoft Excel tool. Such performance analysis helps with one of the goals of the study to identify trends of publication, journals and publishers in the field of SI in nursing, while the science mapping of the connections and collaborations within the field are analysed using the VOSviewer software version 1.6.20. By visualising the distribution of research and authorships, researchers can identify underrepresented areas within a field, thereby facilitating the identification of research gaps.

**RESULTS**

Bibliometric analysis techniques fall into two primary categories: Performance analysis and science mapping. Performance analysis evaluates the contributions of research constituents, while science mapping examines the interconnections between these constituents.<sup>[19]</sup> The following subsections explain the performance analysis and science mapping of this study.

**Performance analysis**

Performance analysis assesses the input of research constituents within a specific domain, incorporating publication-related metrics, citation-related metrics and citation and publication-related metrics.<sup>[19]</sup>

**Publication trend**

Figure 1 illustrates the progression in the publications on SI within nursing practice from 2014 to 2023. Notably, a marked increase in publication frequency in the past 5 years indicates rising interest and development in this field. Since 2015, the annual publication count has consistently shown a growth pattern, with the past 3 years witnessing the most substantial

growth rates. This trend highlights the current expansion of research on SI. It indicates a sustained increase in scholarly output, signifying its fast emergence as a key research area in nursing. Citation trends also support a growing interest in the field. Citations of the publications from recent years are set to grow as the momentum of the publications continues in the coming years.

**Top cited studies**

Table 1 lists the top ten most cited articles, with Selman *et al.*<sup>[21]</sup> in palliative medicine leading with 130 citations. It is followed by Ross *et al.*<sup>[22,23]</sup> with two articles in Nurse Education Today (2018 with 89 citations and 2016 with 73 citations) and Harrad *et al.*<sup>[24]</sup> in Acta Biomedica receiving 71 citations.

**Top journals distribution**

Table 2 presents the top 10 journals with at least nine articles each on SI and nursing practice during the study period. Among these, the Journal of Religion and Health has published over 30 articles, followed by three journals with over 20 articles each: Journal of Christian Nursing, Religions and Journal of Holistic Nursing. The next four journals have published more than ten articles: Journal of Clinical Nursing, BMC Palliative Care, Palliative and Supportive Care and Nurse Education Today. The Journal of Hospice and Palliative Nursing and Supportive Care in Cancer have nine articles each. In total, these ten journals account for 177 of the 461 articles.

The Journal of Clinical Nursing, with a top CiteScore of 6.0 and 95 percentiles, stands out alongside Nurse Education Today and Supportive Care in Cancer, which are notable for their significant contributions. The Journal of Religion and Health, positioned at 99 percentiles, highlights its distinctive role at the intersection of its subjects despite a moderate CiteScore of 4.3. The substantial volume of research in Religions and the Journal of Clinical Nursing signifies their importance in academic discourse. This diverse collection of journals covers a range of specialities, emphasising the broad

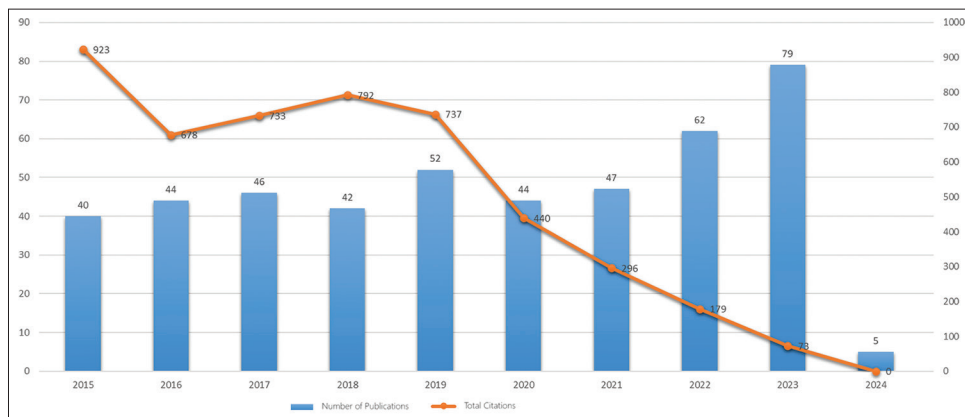


Figure 1: Publication and citation trend.

**Table 1:** Details of top cited studies.

Article title	Year	Source title	Citations	Aim and design of the study
Patients and Caregivers Needs, Experiences, Preferences and Research Priorities in Spiritual Care	2018	Palliative medicine	130	This global study gathers key insights on spiritual needs, experiences, preferences and research directions through focus groups with patients facing life-limiting illnesses and their caregivers.
Nursing and Midwifery Students Perceptions of Spirituality, Spiritual Care, and Spiritual Care Competency	2018	Nurse Education Today	89	This study tracks how Nursing and Midwifery students' perceptions and confidence in spiritual care develop across multiple countries. Using a prospective, longitudinal, correlational survey design, the research follows participants to identify how various educational and experiential factors affect their ability to integrate spirituality into future patient care.
Factors Contributing to Student Nurses Midwives Perceived Competency in Spiritual Care	2016	Nurse Education Today	73	The pilot study explores factors shaping undergraduate nurses' and midwives' self-perceived ability to deliver spiritual care. The research employed a cross-sectional, multinational, correlational survey design.
Spiritual Care in Nursing: An Overview of the Measures Used to Assess Spiritual Care Provision and Related Factors amongst Nurses	2019	Acta Biomedica	71	This literature review investigates the complex reasons behind inconsistent spiritual care delivery by nurses. It aims to shed light on these challenges and pave the way for improved patient care.
Spiritual Care Education of Health Care Professionals	2015	Religions	68	A systematic literature review examines various theories and methods used in clinical education for spiritual care. This paper aims to identify how spiritual leadership can support health-care professionals and students throughout their learning process.
Spiritual Needs and Spiritual Support Preferences of People with End-Stage Heart Failure and their Carers	2015	Journal of Nursing Management	65	Through semi-structured interviews, researchers explored the spiritual needs and support preferences of end-stage heart failure patients and their caregivers. Analysis of this interview data contributed to localised spiritual support guidelines.
Nurses Perceptions of Spirituality and Spiritual Care Giving	2016	Indian Journal of Palliative Care	64	A cross-sectional study was conducted with Jordanian nurses to explore their perceptions of spirituality and spiritual care, with a key focus on identifying any connections between these views and their demographic characteristics.
Meeting Patients Spiritual Needs During End-of-Life Care	2018	Journal of Clinical Nursing	63	This study explores nurses' and health-care professionals' perceptions of spiritual care and how spiritual care training impacts clinical roles. A qualitative methodology was employed to in-depth insights.
Understanding Spirituality and Spiritual Care in Nursing	2017	Nursing standard (Royal College of Nursing [Great Britain]: 1987)	58	This conceptual paper looks into various definitions of spirituality, exploring its increasing importance in health-care and urging the integration of spiritual care.
The Impact of Nurses Spiritual Health on their Attitudes toward Spiritual Care, Professional Commitment, and Caring	2016	Nursing Outlook	56	This cross-sectional survey explores the impact of nurses' spiritual health on their attitudes toward spiritual care, caring and professional commitment.

applicability of nursing and healthcare research. This reflects an increasing recognition of the necessity for a holistic approach in nursing practice, integrating physical, emotional and SI.

#### Top publishers

The top ten publishers that have made significant contributions to research on SI and nursing practice have Sage Publications at the forefront, featuring 38 publications.

The other journals are published by established names such as Wiley, Springer Nature, Blackwell Publishing Ltd. and MDPI, indicating the growing reach and recognition of SI research within various disciplines such as science, medicine, social sciences and humanities. Other medical and health-care publishers such as Lippincott Williams and Wilkins, BioMed Central Ltd. and Churchill Livingstone (now part of Elsevier) are also featured in the top publishers of the articles selected in this study.

**Table 2:** Journals distribution.

Journal names	CiteScore	Highest percentile	Citations (2019–22)	Documents (2019–22)	Number of publications	Percentage of publications
Journal of Religion and Health	4.3	99% - 3/584 Religious Studies	4,000	927	31	7
Journal of Christian nursing: a quarterly publication of Nurses Christian Fellowship Religions	0.2	9% - 752/830 General Medicine	98	421	28	6
Journal of Holistic Nursing	1.1	91% - 52/584 Religious Studies	4,054	3,558	26	6
Journal of Clinical Nursing	3.6	83% - Jun-33 Nursing (miscellaneous)	505	142	21	5
BMC Palliative Care	6	95% - 6/130 General Nursing	8,264	1,384	15	3
Palliative and Supportive Care	4.1	75% - 201/830 General Medicine	2,938	712	14	3
Nurse Education Today	4	85% - 20/130 General Nursing	1,605	399	14	3
Journal of Hospice and Palliative Nursing	5.5	93% - 9/130 General Nursing	6,848	1,248	10	2
Supportive Care in Cancer	2.6	74% - 16/60 Advanced and Specialised Nursing	874	332	9	2
	5.1	56% - 158/366 Oncology	14,474	2,825	9	2

### Science mapping

Science mapping investigates the connections among components of research.<sup>[19]</sup> Methods for science mapping include citation analysis, co-citation analysis, bibliographic coupling, co-word analysis and co-authorship analysis.<sup>[19]</sup>

### Author keywords analysis

Keyword analysis identifies keyword co-occurrence, where nodes represent keywords and the density between nodes indicates the strength of their relationship. To improve accuracy and reduce bias in keyword classification, 'author keyword' selection was used, leveraging keywords provided by the authors. Out of 805 keywords, 796 were identified as the core set of terms, with the top ten being spiritual care, spirituality, nurses, nursing, palliative care, religion, SI, nursing education, health care and spiritual care needs.

### Co-authorship amongst authors

Co-authorship analyses the dynamics of social interactions between authors and their affiliations and their corresponding influence on the evolution of the research field.<sup>[19]</sup> Using VOSviewer for co-authorship analysis with a minimum of two publications identified 1495 authors, of which only 226 networked into 10 clusters. Central figures such as Wilfred McSherry, Trove Giske, Elizabeth Johnston Taylor, Fiona Timmins and Linda Ross emerged as key collaborative researchers.

The ten clusters within the co-authorship network in Figure 2 identify diverse themes in spiritual care research: Cluster 1 in red, with 16 items, highlights the complexity of spiritual care

in nursing and midwifery education. It points out the role of personal spirituality in holistic care and discusses the challenges in incorporating spiritual care into healthcare education, especially in non-religious and mental health contexts.<sup>[22,23,25-32]</sup> Cluster 2 in green explored SI integration in nursing across contexts to explore spiritual care in nursing.<sup>[33-42]</sup> Cluster 3, in blue, focuses on curriculum evaluation by exploring perceptions, implementation and educational strategies of spiritual care.<sup>[43-48]</sup> Cluster 4 in yellow studies the role and challenges of integrating spiritual care within healthcare, especially in palliative contexts. They pinpoint significant barriers nurses face in addressing patients' spiritual concerns and demonstrate the tangible benefits of spiritual care training. This enhances healthcare professionals' focus on spiritual needs and improving patient outcomes like sleep quality.<sup>[49,50]</sup> Cluster 5 in purple highlights the indispensable role of spiritual care in enhancing healthcare quality and the urgent need for concerted efforts to strengthen spiritual care competencies among healthcare professionals. The implementation of spiritual care training protocols has tangible benefits, significantly improving nurses' spiritual health and care competencies. By prioritising the enhancement of spiritual care training, the healthcare sector can improve patient outcomes and address the global nursing shortage challenge.<sup>[51,52]</sup> The remaining clusters, cluster 6, emphasise SI integration in nursing education and practice, incorporating digital competencies.<sup>[53-55]</sup> Cluster 7 focuses on advancing SI integration through empirical research and educational innovation.<sup>[56-58]</sup> Cluster 8 highlights the importance

of deepening the conceptualisation, assessment and implementation of SI in nursing.<sup>[59-61]</sup> Cluster 9 investigates SI's perceptions, values and integration into healthcare.<sup>[9]</sup> Finally, cluster 10 validates and explores the competencies of the SI, especially in critical care nursing.<sup>[62,63]</sup>

**Bibliographic coupling of authors**

A bibliographic coupling analysis examines the connections between cited works to grasp the evolution or current trends of topics within a research area.<sup>[19]</sup> Identifying publications with at least one citation per document revealed a significant pattern among 1495 authors, narrowing down to 1000 connected through shared references. Figure 3 identifies Wilfred McSherry, Elizabeth Johnston Taylor, Trove Giske, Fiona Timmins and Silvia Caldeira as central authors, noted for their prolific contributions and for referencing works similar to those cited by others. The visual representation uses the thickness and colour of edges to indicate the strength of these connections, demonstrating the extent of bibliographic coupling and suggesting a solid thematic or intellectual affinity among these authors [Figure 3]. The analysis revealed nine clusters of authors, each representing a community with shared research interests. The most prominent cluster 1, with 345 authors, highlights

identifying spiritual care's role in holistic healthcare. Cluster 2, with 242 authors, focuses on nurses' perceptions and competencies in spiritual care. Cluster 3, comprising 185 authors, explores the enhancement of nurses' spiritual care skills across various cultures. Cluster 4, with 120 authors, delves into developing precise tools for measuring and improving spiritual care competencies. The remaining clusters, each with fewer than 100 authors, cover topics ranging from the relationship between spirituality and nursing, the role of SI in stress management and job satisfaction, the integration of digital competencies in spiritual care provision, the importance of spiritual care in health-care practices and to reflections on the actual practice of spiritual care by healthcare professionals. Two isolated nodes, closely linked to the main study but separated from the main clusters, deserve attention. Alrashidi *et al.*<sup>[6]</sup> uniquely explored SI as a mediating variable, unlike other authors who viewed it directly, uncovering its role in linking nurses' well-being with life satisfaction amid COVID-19. Nurochim *et al.*<sup>[64]</sup> investigated the positive relationship between SI and emotional regulation among teachers in the education sector. While other authors focused on healthcare, this study examines the growth and effectiveness of educators.

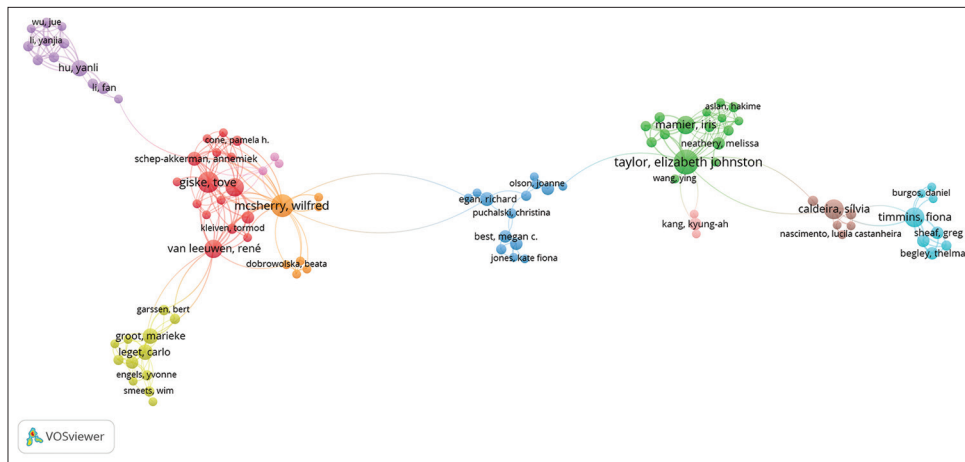


Figure 2: Co-authorship of authors network analysis.

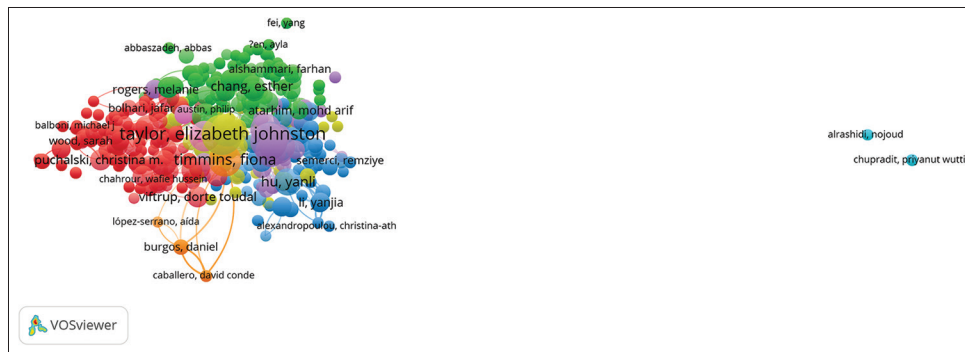


Figure 3: Bibliographic coupling of authors.

### **Bibliographic coupling of countries**

Figure 4 reveals five main clusters, each represented by a different colour. Each node's size illustrates each country's significant contributions, while the lines between countries indicate bibliographic coupling. Setting a minimum document count for a country to at least one, the largest set of connected items consists of 69 out of 81 countries. The figure highlights that the United States and Iran have the most substantial connections, followed by Turkey, the United Kingdom and Australia.

The US research highlights the importance of educational interventions for healthcare professionals, especially nurses. It emphasises the need for assessment tools to help them acquire specific competencies in spiritual care. Iranian studies often reflect on the cultural and religious setting that influences the perception and provision of spiritual care, emphasising and addressing spiritual needs within Islamic beliefs. There is considerable focus on integrating spiritual care into healthcare practices through educational programs, highlighting the role of SI and communication skills. Turkish research explores the connection between spiritual care and patient outcomes, examining the impact of nurses' spirituality and compassion on their care practices as well as the competencies and perceptions of nurses regarding spiritual care. The UK research stresses developing, validating and implementing tools and frameworks for assessing and improving spiritual care competencies among healthcare professionals. There is a strong priority on educational resources and the creation of competency assessment tools. Australian studies emphasise evaluating spiritual care education curricula and implementing training programs for a wide range of healthcare professionals, not only nurses. There is an emphasis on establishing a national concurrence and fostering interdisciplinary partnerships to address patients' spiritual needs through holistic care.

The UK and Australia prioritise the development of educational tools and competency frameworks, while Iran and Turkey emphasise SI and ethical education. Each country's barriers to implementing spiritual care are unique, reflecting local healthcare dynamics and cultural norms. The UK and Australia employ structured approaches with competency frameworks and national strategies for integrating spiritual care. In contrast, the U.S., Iran and Turkey focus on the impact of care on patient outcomes and the personal qualities of healthcare providers.

### **DISCUSSION**

SI is an evolving research domain and is acknowledged as a distinct form of intelligence. Often referred to as SI or SQ, the concept was initially introduced by Danah Zohar and Ian Marshall in their seminal work, 'Spiritual Intelligence: The Ultimate Intelligence'.<sup>[1]</sup> They argue it uniquely facilitates a sense of life's meaning and purpose. Although the authors of the present study initially set out to understand the growth

in the field of SI in the nursing and healthcare industry, there was not enough evidence unless search keywords pertaining to SQ and spiritual care<sup>[13]</sup> were added. This broadened approach proved fruitful, demonstrating the need for acknowledging the various terms used to discuss SI within the nursing and health-care context.

The research on SI in the nursing field has seen a surge in publications since 2015, particularly recently. This development reflects growing interest and suggests the benefits of SI in patient care and well-being and its increasing recognition as an important aspect of nursing practice.<sup>[7]</sup> Exploring practical applications promises to optimise nursing and empower nurses.<sup>[10]</sup> Table 1 is an indication of the growing recognition of spiritual needs and preferences. The listed studies utilised a diverse range of methodologies, including qualitative interviews for in-depth exploration, cross-sectional and longitudinal surveys for capturing trends and change over time, literature reviews for synthesis of existing knowledge and conceptual papers for theoretical development. The importance of spiritual care in life-limiting illnesses and palliative care, not only for the patient but also for the caregiver, is highlighted in the most cited study.<sup>[21]</sup> Having two top-cited articles<sup>[22,23]</sup> on spiritual care specifically published in an education-focused journal like 'Nurse Education Today' reinforces the idea that these studies directly address a gap in nursing education related to SI. The spread of top-cited articles in various journals suggests that research in this field is capturing the attention of researchers from various disciplines and with diverse perspectives.

The percentage of the 461 articles in the top ten leading journals ranged from 7% to 5% in Table 2, suggesting that research is not confined to a single niche or subfield within nursing. The presence of journals from various fields, such as Religious Studies, General Nursing and Oncology, suggests that SI in nursing attracts researchers from diverse backgrounds and disciplines. 'Journal of Religion and Health' and 'Religions' are categorised as religious studies, and their presence in this list suggests a significant emphasis on the religious aspects of SI. This highlights the importance of understanding spiritual care within its broader cultural and religious contexts.<sup>[47,65]</sup> The publishers, including established names such as Sage, Wiley, Springer Nature and MDPI, indicate the growing legitimacy, potential impact, reach and recognition of SI research and suggest an opportunity for these publishers to further encourage the field by supporting dedicated journals, special issues or open access initiatives.

Considering the bibliometric science mapping, starting with keywords, the author-identified keywords highlight key themes in spirituality research, with a concentration on 'spiritual care' and 'spirituality'. While 'religion' is present, the focus on SI and a broader health-care perspective suggests a shift beyond specific religious affiliations. The co-authorship

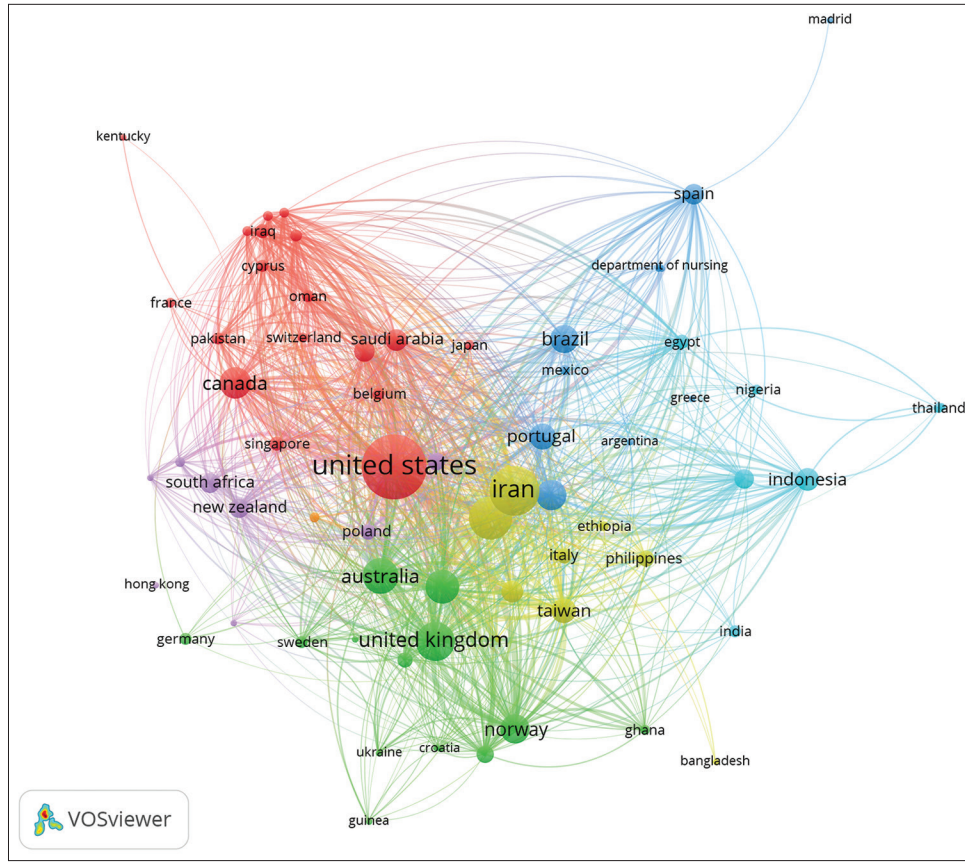


Figure 4: Bibliographic coupling of countries.

analysis using VOSviewer [Figure 2] highlights several authors to be central within the network, suggesting that they have co-authored publications with multiple other scholars. For instance, central figures such as Mcsherry, Giske, Johnston Taylor, Timmins, Caldeira and Ross have made significant contributions to fostering collaboration and advancing knowledge in spiritual care research.<sup>[23,29,36,54,56]</sup> The presence of smaller, tightly connected clusters of authors suggests the existence of collaboration groups or teams that frequently work together. The overall interconnectedness of the network suggests that collaboration is widespread within this field of study. This contrasts with a network of isolated clusters, which might indicate a more fragmented research landscape.

Figure 3 visually represents the intellectual relationships between different scholars based on their publications. The presence of several clusters suggests that there are distinct communities of researchers who are more likely to cite each other's work. This may be due to them sharing common research interests or methodologies. Some authors appear to be more central within their respective clusters, suggesting that their work is highly influential within that community. Taylor *et al.*, Timmins and Caldeira, Viftrup *et al.*, Puchalski *et al.*, Hu *et al.*, Puchalski *et al.*, and Chang *et al.* are some

influential authors.<sup>[37,48,54,66-68]</sup> The proximity of clusters reflects a narrower field with a substantial number of co-citations due to overlapping research areas or methodologies, leading to a visually crowded appearance. This provides opportunities for researchers to expand into uncharted areas related to the SI concept.

Bibliographic Coupling of Countries [Figure 4] shows several clusters suggesting that there are distinct groups of countries that frequently co-cite each other's research. For example, there is a cluster containing the United States and Canada and another containing Turkey and Iran. This may be due to factors such as geographical proximity, shared research interests or participation in joint research projects. Understanding regional trends like the US's focus on educational tools, Iran's emphasis on cultural aspects and Australia's prioritisation of competency frameworks broadens perspectives and aids in identifying potential collaborators. The study has reported the current landscape of SI research in nursing and healthcare. The analysis revealed a flourishing field with growing interest and potential benefits for patient care and well-being. The findings of this study can be used to identify potential areas for future research. Further research is crucial to delve deeper into the education



and practical applications of SI for overall healthcare delivery. Moving forward, exploring newer areas within SI, fostering collaboration across geographical and disciplinary boundaries and promoting dedicated avenues for research dissemination such as specialised journals or open-access initiatives hold immense promise for the future of SI in nursing and healthcare.

### Limitations

Although our study is quite comprehensive, it retrieved data for analysis from only one database, Scopus. This approach might omit some relevant research articles. Further, our study was limited to research articles published in English. Peer-reviewed research articles in languages other than English result in a vast majority of such papers being seldom referenced. Future studies must include research articles from as many languages as possible in their reviews.

### CONCLUSION

The findings from this analysis highlight the growing interest and significance of continued research in this field. The co-citation and bibliographic coupling analyses revealed central authors and collaborative clusters, highlighting the field's collaborative nature and opportunities for further knowledge exchange. These findings advocate for continued research on spiritual care, particularly regarding its measurability and integration into the curriculum of healthcare professionals.

By fostering both SI and care, nurses and healthcare professionals can potentially cultivate more fulfilling and integrated lives, ultimately contributing to improved patient well-being and holistic care delivery. Nurses and other professionals who develop their SI can find greater meaning in their work, fostering a sense of purpose that fuels innovation and exploration. This could lead to groundbreaking discoveries that push the boundaries of current medical knowledge. SI can be directly integrated into patient care, informing mental health interventions and potentially improving existing treatments. The positive impact on mental and emotional well-being extends beyond the individual, with the potential to promote healthier lifestyles across society and ultimately reduce healthcare costs.

Research is critical for highlighting the significance of SI for both healthcare professionals and patients. The measurable construct of SI is of particular interest to the authors. Three major instruments for measuring SI include SISRI-24,<sup>[69]</sup> ISIS<sup>[11]</sup> and SQ21.<sup>[70]</sup> King's<sup>[69]</sup> research, which introduced the SISRI-24 with strong psychometric support, is the most extensive on SI assessment. Future research efforts should delve deeper into this aspect to establish its practical applications. Hence, the authors leave the readers with some potential research questions for future studies.

### Measurability and validation

- How can SI be reliably and validly measured within the context of nursing practice?

- How do existing SI measurement tools such as King's SISRI-24, Amram's ISIS and Wigglesworth's SQ21 translate and adapt to diverse cultural and religious contexts?
- Can objective measures be developed to assess the impact of SI on patient care and well-being?

### Integration and implementation

- What are the most effective strategies for integrating SI education into existing nursing curricula?
- How can spiritual care interventions be seamlessly woven into the daily routines of nurses and other healthcare professionals?

### Impact and outcomes

- What is the specific impact of SI on nurses' well-being, job satisfaction and resilience?
- Does fostering SI in nurses lead to improved patient outcomes, such as reduced anxiety, increased sense of meaning and better-coping mechanisms?

### Global perspectives and sustainability

- How do cultural and religious beliefs influence the understanding and application of SI in diverse nursing contexts worldwide?
- Can collaborative research efforts be established to explore and compare regional and international approaches to SI in nursing practice?
- Does SI contribute to a more sustainable and fulfilling career path for healthcare professionals?

### Statements and declarations

All authors contributed to the study's conception and design. All authors read and approved the final manuscript.

### Ethical approval

The Institutional Review Board approval is not required.

### Declaration of patient consent

Patient's consent was not required as there are no patients in this study.

### Financial support and sponsorship

Nil.

### Conflicts of interest

There are no conflicts of interest.

### Use of artificial intelligence (AI)-assisted technology for manuscript preparation

The authors confirm that they have used artificial intelligence (AI)-assisted technology for assisting in the writing or editing of the manuscript or image creations.

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